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PATENT

Atty. Docket No. MIC35 P-321

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March 12, 2004

Date

Deborah A. Witvoet
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Art Unit : 1711
Examiner : Jeffrey C. Mullis
Applicants : Petar R. Dvornic et al.
Appln. No. : 09/888,736
Filing Date : June 25, 2001
Confirmation No. : 2078
For : HYPERBRANCHED POLYMER DOMAIN NETWORKS
AND METHODS OF MAKING SAME

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

RESPONSE

In response to the Office Action mailed January 12, 2004, Applicants request further consideration in view of the following arguments.

Claims 1-5, 12-17 and 24 stand rejected under 35 U.S.C. §102 as being anticipated by Heilmann et al. (U.S. Patent Application Publication No. 2003/0096908) and also as being anticipated under 35 U.S.C. §102(e) by Gaddam et al. (U.S. Patent No. 6,448,337).

Applicants have submitted a Declaration which, according to the Examiner, "shows conception and reduction to practice of a single species mainly that containing a hyperbranched polyurea containing amine functional groups reacted with a linear polydimethylsiloxane containing epoxide functional groups and a species does not necessarily



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render obvious a genus.” The Examiner has further stated that the Declaration is ineffective with respect to each of the cited 102(e) references because both the patent reference and the published application “are claiming the same thing.”

It is respectfully submitted that the Declaration is effective because the species shown in the applied references would have been obvious in view of the species shown to have been made by the Applicant prior to the effective dates of the applied references, and because Applicants are not claiming the same invention as the applied references.

A reference or activity applied against generic claims may (in most cases) be antedated as to such claim by an affidavit or declaration under 37 C.F.R. 1.131 showing completion of the invention of only a single species, within the genus, prior to the effective date of the reference or activity. See MPEP Section 715.02 (GENERAL RULE AS TO GENERIC CLAIMS), which cites *Ex parte Biesecker*, 144 USPQ 129 (Bd. App. 1964); *In re Fong*, 288 F.2d 932, 129 USPQ 264 (CCPA 1961); and *In re Defano*, 392 F.2d 280, 157 USPQ 192 (CCPA 1968) for authority. MPEP Section 715.02, however, cautions that a showing of prior possession of a single species may not be sufficient for the “unpredictable arts.”

Presumably, the Examiner has taken the position that the general rule, that showing completion of a single species within the genus prior to the effective date of the reference is sufficient, does not apply to the claimed invention because it relates to the “unpredictable arts.” There does not appear to be any other way of reasonably explaining the Examiner’s statements supporting a determination that the Declaration is ineffective to overcome the references.

Under MPEP Section 715.03 (REFERENCE OR ACTIVITY DISCLOSES SPECIES- B. Genus Claim), it is stated that a reference can be overcome directly under 37 CFR 1.131 by showing that Applicant completed all of the species shown in the reference prior to the effective date of the reference. However, proof of prior completion of a species different from the species of the reference will be sufficient to overcome a reference indirectly under 37 CFR 1.131 if the species shown in the reference or activity would have been obvious in

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view of the species shown to have been made by the Applicant. See *In re Clarke*, 356 F.2d 987, 148 USPQ 665 (CCPA 1966); *In re Plumb*, 470 F.2d 1403, 176 USPQ 323 (CCPA 1973); *In re Hostettler*, 356 F.2d 562, 148 USPQ 514 (CCPA 1966). Thus, while an applicant may overcome a reference under 37 CFR 1.131 by a direct showing of completion of each of the disclosed species in the reference prior to the effective date of the reference, the law also permits indirect antedating of a reference.

In re Clarke states that “an applicant should not be prevented from obtaining a patent to an invention where a compound described in a reference would have been obvious to one of ordinary skill in the art in view of what the affidavit proves was completed with respect to the invention prior to the effective date of the reference.” The *Clarke* court provided the following standard:

In our view, were it can be concluded that facts, offered in a Rule 131 affidavit in support of a general allegation of conception and reduction to practice of the invention, would persuade one of ordinary skill in the art to a reasonable certainty that the applicants possess so much of the invention as to encompass the reference disclosure, then that showing should be accepted as establishing *prima facie* a case of inventorship prior to the reference, sufficient for the purpose of overcoming the reference in an *ex parte* case.

In re Hostettler makes it clear that the Rule 131 requirement for facts showing a completion of the invention “does not mean affiant must show a reduction to practice of every embodiment of the invention.” The court stated that the Board (and presumably the Examiner) had “lost sight of that which appellants seek to claim, i.e., the use of a new catalyst for an old reaction.” The Examiner and Board found that the Applicants’ Rule 131 affidavit was insufficient because it only disclosed a single species, i.e., a catalyzed reaction of methanol with a monoisocyanate, which was not a showing of completion of the use of stannous octoate as a catalyst for reaction of polyols with polyisocyanates to form polyurethanes as disclosed in the reference. The Board (and Examiner) “ignored the fact,

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regardless of functionality, alcohol plus isocyanate produces urethane, and it is the use of stannous octoate to catalyze this urethane-forming reaction that Applicants seek to claim.” The court concluded that the apparent requirement of the Patent Office that appellants show production of polyurethane resins or foams was improper in view of the nature of the invention.

Applicants submit that the facts and issues in the above-referenced application are analogous to those in *Hostettler*. The Examiner has stated that the Declaration is ineffective to overcome the Gaddam et al. patent and the Heilmann application because it “only shows conception and reduction to practice of a single species mainly that containing a hyperbranched polyurea containing amine functional groups reacted with a linear polydimethylsiloxane containing epoxide functional groups.” Applicants’ invention is directed to a curable composition comprising a hyperbranched polymer that is potentially reactive with a second polymer to form a cross-linked network. The Declaration shows completion of this invention before the effective date of the reference.

From the species disclosed in the Declaration, those having ordinary skill in the art would expect that generally any suitably functionalized hyperbranched polymer (e.g., polyurea, polyurethane, polyamidoamine, polyamines, polyester, etc.) could be substituted. It is clear from Applicants’ disclosure that the particular type of hyperbranched polymer, the particular type of second polymer reacted with the hyperbranched polymer, and the particular types of functional groups employed to facilitate reaction of the hyperbranched polymer with the second polymer, are not critical to the invention and can be easily determined by those having ordinary skill in the art. This is evident from the specification. For example, paragraph 0018 states as follows:

The hyperbranched polymers that may be used for preparing the curable polymer compositions and cured compositions of the invention include generally any hyperbranched polymer having terminal functional groups that can be reacted with functional groups on another chemical species to form cured or cross-linked polymer networks.

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The above quotation demonstrates that applicant regarded the selection of hyperbranched polymers and the selection of functional groups to cross link the hyperbranched polymers with other polymers as being a routine matter for those having ordinary skill in the art. Further, paragraph 0021 of the specification states as follows:

The polymers used for cross-linking the hyperbranched polymers include generally any polymer having terminal groups that will react with the terminal groups on the hyperbranched polymers. Various known chemistries may be used for covalently bonding (cross-linking) the hyperbranched polymers with the cross-linking polymers.

The above quotation clearly indicates that the applicants regarded the selection of the cross-linking polymer as being well within the abilities of those having ordinary skill in the art.

Additional evidence that those having ordinary skill in the art would have regarded the selection of particular polymers and functional groups trivial and obvious may be found in U.S. Patent No. 5,731,095, which discloses cross-linkable compositions and cross-linked polymeric coatings prepared from the cross-linkable compositions. The '095 patent teaches that generally any dendritic polymer can be used in the preparation of the water-soluble or water-dispersible coating compositions (column 4, lines 11-17). Note in particular that the '095 patent discloses the use of hyperbranched polyols (from Perstorp) in Example 1. This is the only chemical species of hyperbranched polymer disclosed in either the Gaddam et al. patent or the Heilmann application. Similarly, the use of any of various chemistries for effecting cross-linking or curing is well known in the art. This is demonstrated, for example, in U.S. Patent No. 5,866,630, which discloses cross-linkable coating compositions in which a polymer contains cross-linkable functional groups that may be reacted with a cross-linking agent containing appropriate reactive groups. Disclosed examples include polymers having carboxyl groups which are reactive with hydroxyl groups, amine groups, or isocyanate groups on a cross-linking molecule. Those having ordinary skill in the art would understand that various other condensation type reactions, such as those conventionally used for cross-linking

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or curing polymer compositions, may be employed. Finally, those having ordinary skill in the art would understand that generally any polymer cross-linker having functional groups that will reaction with the functional groups of the hyperbranched polymer may be used for cross-linking with the hyperbranched polymer, and therefore the selection of polymer cross-linkers would have been obvious to those having ordinary skill in the art. The obviousness of selecting different polymer cross-linking agents is illustrated in, for example, U.S. Patent Nos. 5,543,456 and 6,140,012, which discloses various types of polymer cross-linkers that may be used interchangeably.

Thus, those having ordinary skill in the art would have readily envisioned substantially all species encompassed by Applicants' claims from the specific embodiment of the invention that was reduced to practice as set forth in the Applicants' Rule 131 Declaration. The invention pertains to the discovery of useful cross-linkable compositions comprising a hyperbranched polymer and a second polymer capable of cross-linking with the hyperbranched polymer. Based on this discovery, those having ordinary skill in the art would have recognized that generally any conventional cross-linking chemistry may be utilized, and that generally any type of hyperbranched polymer and generally any type of second polymer may be used for cross-linking the hyperbranched polymer. While those having ordinary skill in the art would expect that the selection of particular hyperbranched polymers and cross-linking polymers would affect the physical properties of the resulting cured or cross-linked product, the chemistry itself is not unpredictable.

Further, the MPEP (715.03) states that a Rule 131 Declaration need only show "as much as the minimum disclosure required by a patent specification to furnish support for a generic claim." It is respectfully submitted that the overall concept of the invention is completely conveyed and supported by a single example as reduced to practice according to Applicants' Rule 131 Declaration. It is predictable that generally any hyperbranched polymer and generally any second (cross-linking) polymer may be used with suitable, well-known cross-linking chemistry to achieve the generic invention. Because the various species would

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have been obvious to those having ordinary skill in the art based on the species reduced to practice, Applicants have provided adequate basis for inferring that the species completed by Applicants prior the effective reference date has generic applicability. Therefore, applying the rule of law as set forth in *In re Plumb*; *In re Clarke*; *In re Hostettler*, and others, Applicants' Rule 131 affidavit (dated September 21, 2003 and filed along with the amendment dated September 25, 2003) is effective for overcoming the rejections under 35 U.S.C. §102(e) based on the Gaddam patent and the Heilmann et al. application.

Turning to the second point, Applicants are not claiming the same invention as is claimed in either the Gaddam et al. patent or the Heilmann et al. application. The United States Court of Appeals for the Federal Circuit ruled on July 3, 2003 that the United States Patent and Trademark Office has properly construed 37 CFR §1.601(n) to require application of a two-way test for determining whether two parties claim the same patentable invention. *Eli Lilly & Co. v. Board of Regents of the University of Washington*, 67 USPQ2d 1161 (CAFC 2003). According to the regulations "an interference-in-fact exists only if both parties to an interference have at least one claim that defines the same patentable invention." The two-way test requires both that Applicants' invention is either anticipated or obvious from the invention claimed in the reference and the invention claimed in the reference is anticipated or obvious from Applicants' claimed invention. The specific requirements in the Gaddam et al. patent for "from 2 to 20 parts by weight of a first component solute polymer . . . ; from 0.01 to 10.00 parts by weight of second component solute polymer . . . and . . . from 70.00-97.99 parts by weight of a third component comprising at least one free-radically polymerizable solvent monomer," are not anticipated or obvious from Applicants' claimed invention. Similarly, the requirement in the Heilmann et al. claims for melt processibility at temperatures of 100°C or less are neither anticipated nor obvious from Applicants' claims. Thus, applying the United States Patent and Trademark Office's own construction of 1.601(n), the two-way test is not met, and therefore, Applicants' claims are not for the same invention as the claims of the Heilmann et al. publication or the Gaddam et al. patent. Accordingly, Applicants' Rule



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1.131 Declaration is effective to antedate the Heilmann et al. reference (Patent Application Publication No. US 2003/0096908 A1) and the Gaddam et al. patent (U.S. Patent No. 6,448,337).

CONCLUSION

In view of the above remarks, it is respectfully submitted that issuance of a notice of allowance is appropriate and is earnestly solicited.

Respectfully submitted,

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By: Price, Heneveld, Cooper,
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March 12, 2004

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